

## REMARKS

Claims 1-37 remain pending.

The Examiner rejected claims 1-11, 19-26, 28-29, and 36-37 under 35 U.S.C. §103(a) as being unpatentable over Otani (U.S. patent 6,351,469). The Examiner has rejected the remaining claims under 35 U.S.C. §103(a) as being unpatentable over Otani in view of one or more secondary references Eng (U.S. patent 5,963,557), Friedman (U.S. patent 5,949,788), and Data-Over-Cable Service Interface Specification (DOCSIS), Radio Frequency Interface Specification, SP-RFI-I02-971008, Interim Specification, Cable Television Laboratories, 1997 (herein referred to as DOCSIS-1997). The Examiner's rejections are traversed as follows.

The present invention is directed towards methods, apparatus, and computer readable medium for using or providing multiple channels within a cable modem. Claim 1 is directed towards a method that requires "transmitting a first portion of the upstream data on a first upstream channel from the cable modem" and "transmitting a second portion of the upstream data on a second upstream channel from the cable modem, the second upstream channel differing from the first upstream channel." Claim 1 also requires that "the first upstream channel and the second upstream channel were assigned within a downstream channel received into the cable modem." Claim 36 is directed towards a computer readable medium that has a similar limitation. Claim 11 is directed towards a cable modem and requires that "the multiple upstream channels are assigned within a downstream channel received into the cable modem." Claim 19 is directed towards a head end for receiving upstream data from a cable modem and requires that the head end is "further operable to assign the first upstream channel and the second upstream channel to the cable modem." Claim 20 is another method claim for transmitting upstream data and requires "receiving a downstream signal within a downstream channel into the cable modem, wherein the downstream signal specifies an assignment of a first upstream channel and a second upstream channel." Claim 36 is directed towards a computer readable medium and has a similar limitation. Claim 35 is directed towards a cable modem having a processor configured to "receive a downstream signal within a downstream channel into the cable modem, wherein the downstream signal specifies an assignment of a first upstream channel and a second upstream channel."

Assigning multiple channels to a cable modem in the downstream channel allows the device which is responsible for channel assignments, *e.g.*, the head end, to consider various performance parameters, such as load balancing, when assigning channels to its associated cable

modems. This same advantage cannot be achieved if each cable modem were to self-allocate its channels by itself, as taught by the primary reference Otani.

Primary reference Otani teaches away from combination

It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983) as referenced by MPEP 2145 (D).

The primary reference Otani discloses a system having a center device and a number of terminals. Each device has access to two channels, a B channel (for voice) and a C channel (for data). Column 15, lines 48-51. Each device can allocate its own voice (first medium signal) or data (second medium signal) to a particular sub-channel based on idle/busy information. See Column 4, lines 52-58: “center-side channel managing unit 206 (the channel managing unit 408) *allocates* to the second medium signal [which terminates at the center-side second medium terminating unit – lines 33-35] an idle communication channels to be allocated to the first medium signal [which terminates at the center-side first medium terminating unit – lines 30-32] based on the first medium idle/busy information that the center device 101 *itself* stores.”. Also see Column 5, lines 23-43: “terminal-side channel managing unit 212 (the channel managing unit 507) *allocates* to the second medium signal [which terminates at the terminal –side second medium terminating unit – lines 8-9] an idle communication channel among the communication channels to be allocated to the first medium signal [which terminates at the terminal –side first medium terminating unit – lines 5-8] based on the first medium idle/busy information that the terminal 102 *itself* stores.”

As admitted by the Examiner, Otani fails to teach a method or apparatus for transmitting or configuring multiple upstream channels in a cable modem based on upstream channels assigned in the downstream channel, in the manner claimed in claims 1, 11, 20, 35, 36, and 37. Additionally, Otani fails to teach or suggest a head end that assigns a first and a second upstream channel to a cable modem, in the manner claimed in claim 19. The secondary references cited by the Examiner for the rejections also fail to teach such limitations.

The Examiner goes on to assert that it would be obvious to one having ordinary skill in the art at the time of the invention was made to modify Otani to include assigning a first upstream channel and a second upstream channel in a downstream channel. It is respectfully submitted that Otani teaches away from a modification in which channels are assigned within the downstream channel. In fact, such a modification would go against the intended purpose as taught in Otani. Otani specifically teaches that each terminal allocates channels *itself*. Column

4, lines 52-58. This teaching of self-allocation is in direct opposition to the concept of having channels assigned in the downstream channel, *e.g.*, by a head end.

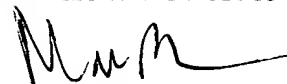
Although assigning a channel in the downstream to a single cable modem is known (as pointed out in Limb et al. by the Examiner), the primary reference Otani fails to provide motivation for combining such limitation with the disclosed feature of using two channels at a single terminal. Since Otani explicitly teaches away from channels being assigned in a downstream channel of a terminal by teaching *self-allocation* of the channels used by a terminal, it is respectfully submitted that one would not be motivated to combine the feature of assigning channels in a downstream channel to the teachings of Otani and that it is improper to make such a combination.

For these reasons, it is respectfully submitted that claims 1, 11, 19, 20, 35, 36, and 37 are patentable over the cited references.

The Examiner's rejections of the dependent claims are also respectfully traversed. However, to expedite prosecution, all of these claims will not be argued separately. Claims 2-10, 12-18, and 21-34 each depend directly from independent claims 1, 11, or 20 and, therefore, are respectfully submitted to be patentable over cited art for at least the reasons set forth above with respect to claims 1, 11, or 20. Further, the dependent claims require additional elements that when considered in context of the claimed inventions further patentably distinguish the invention from the cited art.

Applicant believes that all pending claims are allowable and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,  
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